PAEDIATRIC COMPUTED TOMOGRAPHY EXPOSURE AND RADIATION-INDUCED CANCER: SETTING UP OF THE FRENCH COHORT OF CHILDHOOD CT SCAN

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Background and aims: The increased use of computed tomography (CT) scans for paediatric patients raises the question of a possible impact of such ionising radiation (IR) exposure on the occurrence of secondary leukaemia and cancers. We describe the preliminary results of an ongoing cohort study of children exposed to CT in France, performed in collaboration with the "Société Francophone d'Imagerie Pédiatrique et Prénatale". This cohort will be included in the trans-national collaborative EPI-CT project.
Materiel and Methods: In 19 of the most important French paediatric radiology departments, demographic and IR exposure information concerning children less than 5 years, who underwent at least one CT scan between 2000 and 2006, were collected. Inclusion of patients will continue from 2007 to 2013 according to the EPI-CT project. Absorbed organ doses are calculated with the "CT-expo" software.
Results: Until now, 28,190 children free of cancer or leukaemia at the first CT scan examination have been included. Age at first CT scan exposure was less than 1 year for 42% of the population. The mean number of CT examination per child was 1.5 (min 1, max 30) and concerned head in 66% of the cases, thorax in 22%, abdomen and pelvis in 10% and other localisations in 2%. Highest cumulated organ doses were observed for brain and lens during head exposure and mean absorbed doses were 27 mGy (range: 2.8 - 478 mGy) and 30 mGy (0.5 -620 mGy), respectively.
Conclusion: This cohort allows to better characterizing organ doses associated with CT scan exposure in childhood. Relatively high doses to radiosensitive organs (lenses, ovaries, breast, etc…) have been observed, as well as large dose ranges according to the protocols used. The follow-up of the cohort will be first based on cancer incidence up to age 15 to quantify a possible excess paediatric cancer risk.